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RAM SINGH DEL. MAYO SCHOOL OF ART LAHORE

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The Journal of Indian Art and Industry.

THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.

By JOHN GRIFFITHS, Principal of the School of Art, Bombay.

The subject is divided into two main divisions, viz.:—(*a*) articles used for domestic purposes, and (*b*) articles used for religious purposes. Some of the articles in both these divisions are decorated more or less, but nothing is made, either for Hindu or Musulman, as is the case in Europe, simply for the sake of ornament apart from use. Every object, however highly decorated, is made for some useful purpose. But to meet a European demand, a large number of articles are now manufactured simply for ornamental purposes.

The food we eat and how to prepare it has engaged, perhaps more than anything else, the attention of mankind throughout all ages. With the Hindu his food and its preparation has become a part of his religion. Hence it is, he is so particular in the choice of utensils for its preparation, made of a material that can be readily cleaned after using. The very poor, not from choice but of necessity, use earthenware; but the well-to-do natives use wares made of brass and copper, owing to the facility with which these metals can be cleaned after every occasion on which they have been used. Even the very poorest cooly will save something out of his small earnings with which to provide himself with a brass *loti* (drinking cup), which accompanies him wherever he goes. It will be found that vessels of all sizes and varieties of shapes, such as *lotas* for drinking; larger vessels for carrying water and milk and for cooking food; trays, bowls, lamps, spoons; in fact, every article that is used for domestic purposes among the larger number of Hindus, is made of brass and copper, or both combined, when it is called *Ganga-Jamni*—a combination that they are very partial to, owing to the two metals so employed typifying the meeting of the Ganges and the Jumna at Allahabad.

Caste dinners on an extensive scale are given at the time of marriage and religious festivities, or on the death of a relative. On these occasions large copper and brass pots are used for cooking purposes. As the poor in every community form the majority, and as they, owing to their poverty, cannot afford to have in their possession the utensils necessary for the due performance of these ceremonies, wealthy persons keep a set of these pots in their houses, which are lent gratuitously to those who apply for them, on their furnishing proper security for the safe return of the pots after the ceremony is over. In villages where there may be no wealthy persons, the villagers raise a fund among themselves by public subscriptions, and so buy the utensils for common use. The utensils are kept in the custody of a person of trust, and, whenever they are required, they can be obtained by any member of the village community paying a small fee with his application, which goes to a fund for the purpose of repairing the damaged vessels and replacing those that are worn out.

These large caste feasts are not confined to Hindus only, but on certain occasions the Musulmans also hold them. Only the other day a well-known Bohora in Bombay gave the annual festival to his co-religionists on the completion of the period for mourning attending the Mohorum holidays. One of the daily papers mentions that the festival was attended by no less than twelve thousand Bohoras, men, women, and children. The day was observed as a holiday by the community. About four thousand women and children first sat down to dinner at about 1 p.m., and as the women were all zenana women, dinner was served to them by about 150 young lads belonging to the Orphanage in the Queen's Road. The women and children took dinner in groups of ten or a dozen from huge metallic plates. The men were afterwards entertained in parties of one or two thousand, just as it suited their convenience, and the dining lasted until about 9 p.m. The dinner consisted of *halva* (a sort of native confectionery), sweetened rice, curds, meat and salad; sherbet being provided for drink. The feast is estimated to have cost about ₨6,000, there being required for such a large banquet no less than 7,500 lbs. of meat, 100 maunds (2,800 lbs.) of rice, 150 maunds (4,200 lbs.) of ghee or clarified butter, and other articles necessary for cooking the same in their relative proportions. *Pan-supari*, which is always necessary to wind up a native dinner, was not neglected on this occasion. Some idea may be obtained of the immense number of copper vessels required to prepare and to serve food on such an extensive scale as here described.

Method of Manufacture.—Formerly the manufacture of brass and copper vessels was made from slabs of brass and copper, which were beaten out into rough sheets, and then hammered into the shape of the required

vessel. But this operation has now been completely superseded by the introduction of rolled sheets of about four feet square from Europe. The imports into Bombay of brass and copper sheets during 1893—94 are :—

Brass	...	399 cwts.	...	value	₨ 19,824.
Copper	...	145,551 „	...	„	₨ 6,390,639.

Doubtless the whole of these imports are not used in this Presidency. These sheets are of several thicknesses, from that of a sheet of brown paper to half an inch. The thinner sheets from $\frac{1}{32}$ to $\frac{1}{16}$ of an inch are mostly used for making all the hammered articles for domestic purposes. Large pots from two to three feet high and five to six feet in diameter, similar to fig. 5, Plate 23, are made of copper sheets $\frac{3}{8}$ of an inch thick, and are used for cooking and for storing water. Large cylindrical vats seven feet in diameter and seven feet high are made of copper sheets half an inch thick, rivetted together, and used for distilling purposes.

Besides the dealers (*kasars*) who employ the workmen and supply them with material, there are four sets of workmen usually employed in making the ordinary utensils for every-day use in brass and copper, viz. :—(1) *Tambats*, coppersmiths who shape the articles; (2) *Kalaikars*, tinmen who tin the articles; (3) *Otaris*, or casters; (4) *Charkavalas*, workers on the lathe or polishers; and if the vessels are to be ornamented, a fifth set of workmen is introduced—(5) *Nakasha-wallahs*, or men who ornament. These several sets of workmen very rarely do the work of the other, so that in making a vessel it passes through several hands, a division of labour which is characteristic of the making of most things.

The operation of working brass and copper into the various shapes is as follows:—The sheet of copper or brass is placed by the workman on the floor, and on it he traces with a pair of compasses a circle of sufficient size to form the vessel he is about to make, and cuts it out with a pair of scissors. If the article to be made is a small one, such as a *lota* (fig. 14, Plate 24), it is hammered into shape from one piece of metal, beginning from the bottom and working up to the mouth; but if it is a large one, such as the *handa* (fig. 1, Plate 23), then it is made of two pieces with a joint at about the centre. Taking the latter for the purpose of description, the workman, having cut his two pieces of circular metal plates, takes one and softens it in a fire composed of charcoal and cow-dung cakes. He then hammers it into a hollow cup-shaped cavity in a piece of stone or wood (*adhi*), till the flat circular disc is made into a rough hollow form. The piece of metal is again fired, after which the workman proceeds to hammer it into the required shape first on an upright round-headed bar of iron (*sandan*) stuck in the ground, and then on a bent iron bar anvil (*kharvai*) which is fixed in a curiously V-shaped piece of wood (*paykhod*) (Plate 30), upon which the workman sits, gripping the article with his toes, as seen in Plate 31. This operation of alternately heating and hammering the metal is continued until the required shape is acquired, which goes to form the bottom of the vessel. The other piece of metal for the upper half is treated precisely in the same way. The two pieces are now taken and soldered together with brass, borax (*savághi*), and chloride of ammonia (*Navaságar*). To produce the finer joints of the more finished articles, silver is used instead of brass. When the soldering is complete the vessel is again hammered on the bent bar anvil, and is brought to the required form. It is then polished by rough scrubbing with a mixture of powdered charcoal and tamarind pulp, followed by hammering with a small hammer until the whole surface is covered over with a series of facets which reflect the light, and so produces, in a simple way, a very ornamental effect.

The vessel is now complete, and the larger number of articles for domestic use are made and finished in this way. Variously shaped hammers (*hatori*) and anvils (*kharvai*) are used to produce various forms, as shown in Plate 32. If greater finish is required, the article is put on the lathe and polished. A native lathe does not work very true. The vessel is fixed to the lathe with resin, and the wheel is turned by a cooly while the polisher sits on the ground close to the vessel, pressing against it, as it spins round, a sharp bent tool (*rándha*), which he rests on a small iron guide bar, and as often as not on his feet, which accounts for the wabbliness of some of the articles made (Plate 33). One *kalaikar* at Nâsik, named Gyanu, was, until lately, the only one who possessed an English lathe, and his work was truer and far superior, as regards finish, to any produced on the native lathe; and, consequently, his articles commanded a better sale and fetched higher prices. His specialities were small brass candlesticks and finger-bowls, and these, as specimens of turning, cannot be surpassed anywhere. He is now beyond work, being a very old man, but his two sons carry on the business. There are now three other English lathes in use at Nâsik, and to show the native's aversion to stand at his work, all three were provided with benches supported on iron bars screwed to the framework on a level with the top of the lathe, on which the workmen squatted—a position that would be intolerable to a European workman. Many of the smaller vessels, such as water-pots (*lota*), rose-water sprinklers (*gulab-pásh*), scent bottles (*atardán*), and water bowls for pipes (*húka*), are cast and afterwards turned on the lathe. The waste from the copper and brass sheets is used for making castings. The moulds for castings are made from the ordinary red earth, from which the pigment Indian

red is made, mixed with castor oil. For cleaning daily the vessels in ordinary use, ashes (*rakh*), sand (*reti*), or scrapings off the road, are employed.

The above description applies only to the making of the shape of the vessel. When it is required to be decorated, the ornament is either executed in (1) an incised line, or in (2) embossed work or *repoussé*. The first is usually applied to all cast work, and the ornament is simply incised into the metal with a chisel-headed punch and hammer, which produces a much fatter and richer line than that produced by the graver in English work. This kind of work is called "*chirella*" (one cutting), and if the metal is not of sufficient thickness to resist the blows of the hammer, the vessel is filled and rammed with black sand, which fulfils the same purpose as the core of pitch in embossed work. *Lotas*, chains, lamps, bells, and *huka* bowls are invariably ornamented by this method. When the second method (*repoussé*) is adopted, the vessel, if a small one, is filled with melted pitch (*kil*), and if a large one, with a mixture composed of resin (*ral*), pounded brick (*int*), and linseed oil (*tili*), in the proportion of 1, ½, and ¼. Before filling the vessel it is covered over with clay water or wood ash, so that in pouring in the mixture, if any should be spilt on the outside of the vessel, it can be readily removed. The vessel is then allowed to stand until the pitch has cooled and hardened, and so forms a hard core, into which the ground of the ornament is driven by means of small iron punches. The surface of the vessel is then covered with clay water, or thin paper is pasted over it, and when dry the design is drawn with pencil in outline, and this outline is then cut into the metal with a chisel-headed punch, and the paper or clay water removed by washing, leaving the design in a sharply-cut line on the vessel. With a series of small punches of different sizes and shapes—round-headed, flat-headed, chisel-headed—and a small hammer, the workman proceeds to develop the design by driving in the ground with a series of gentle taps, great care being required not to strike too hard, so as not to pierce the metal. The result of this operation will be that the design will appear in very flat relief. The operation is again repeated by driving the ground further in, when higher relief is obtained. The core is now melted out and the vessel is heated to soften the metal, and again refilled with pitch, the operation of hammering with the small punches being continued, both on the ground and the ornament itself, until the desired relief and modelling is acquired. When the ornament is finished, the pitch is removed out of the vessel as follows: A hole is dug in the ground, into which a pot containing cold water is put; the vessel is placed on its side over this, with its mouth over the pot of water. A fire of cowdung cakes is then lighted all round the vessel, which causes the pitch to melt and run out into the pot of water, which cools it, care being taken that the flow of pitch from the mouth of the vessel is continuous and free; otherwise, if the mouth be stopped up, an explosion may take place which will burst the vessel. The vessel is now polished. The old native method was to employ tamarind fruit (*chinch*) and water, rubbed on with the hand, and finishing with fine sand (*reti*), but now sulphuric acid (*tezab*) diluted with water, applied briskly with a brush, is used instead.

Brass, being more brittle and not so malleable as copper, is more difficult to work, and will not stand the amount of relief in the ornament that copper will. If very high relief in copper is required, it is beaten up from the inside, and finished in the ordinary way from the outside.

The large vase shown in Plate 34, which was made in the Reay Art Workshops attached to the School of Art, Bombay, is a good illustration of the manner of working in *repoussé*, and also shows the wonderful malleability of copper. The vase stands 3 ft. 1 in. in height without the cover, and is 2 ft. 10 in. at its greatest diameter. It is hammered into shape from two sheets of copper, $\frac{1}{16}$ of an inch in thickness. These two pieces form the top and the bottom of the vase, and the only joint occurs where these two pieces are soldered together in the centre, in the plain band above the lower row of small flowers. When filled with the composition forming the core, it was of great weight, and had to be worked on a coir mattress to prevent its being damaged when moved about. In taking out the composition in the manner already described above, the greatest precaution had to be exercised to prevent an explosion, which, if it had occurred, would, in addition to injuring the workmen engaged in the operation, have destroyed the labour of some months.

In addition to the large vase in Plate 34, specimens of ornamental work in copper and brass, executed at the Reay Art Workshops of the School of Art, Bombay, are given in Plate 35. These are designed and worked in the metal by lads of the coppersmith caste, from 11 to 16 years of age, who are trained by a master coppersmith, who is the best that could be found in the Presidency. Fig. 1 is a plate, the ornament for which has been designed and executed on the metal by a lad of only 11 years of age. Fig. 1, Plate 36, is a specimen of Cutch work in brass; and figs. 3 and 4, Plate 36, are examples of the coppersmith's art from Poona, which differ very little in character—except that the design and workmanship are better—from that of Cutch work. In the small village of Valvhan, about two miles from Lonouli, on the high road to the Karlá Caves, I found a solitary but very skilful coppersmith at work, having taken up his abode here with a view to catching the eye of travellers on their way to the Caves. Fig. 2, Plate 36, is a specimen of his work in brass. It is better in arrangement than

the examples from Cutch and Poona, which are overdone with ornament—a characteristic fault of nearly all modern native work.

A very common mode of decoration is to veneer wood with sheets of brass. Doors, window frames, columns, pilasters, string-courses, and railings of temples, are often treated in this manner (Plate 37). The wood is first carved in the usual way, and upon the carving are placed thin sheets of brass, which are first roughly hammered into the carving with a wooden mallet, and further worked with wooden punches, in place of the iron punches used in *repoussé*, as the latter would break the metal, until the brass sheets are developed into the form of the ornament beneath. Their edges are secured to the wood by nails.

Many of the gods and the bulls (*nandi*) in the temples are first carved in stone or wood, and afterwards covered with sheets of copper, which are hammered into form as above described. The more wealthy temples use silver, and some even gold. At the temple of Pârbatî, near Poona, is to be seen the head of Mahâdeo worked life-size in silver, the moustache, eyebrows, eyes, and hair being painted in their natural colours; also the large bull (*nandi*) of black basalt, in front of the temple, is, on certain days, covered over with silver sheets, which have been rudely worked into the form of the animal.

PLACES OF MANUFACTURE.

In the Bombay Presidency brass and copper wares are now principally made at Nâsik and Poona, although a considerable quantity is made at Ahmedabad. In most of the other towns of the Presidency, brass and copper wares are made in a small way to meet local requirements, but the best workmen gravitate naturally to where the industry is thriving, as at Nâsik and Poona.

Nâsik.—The Nâsik wares are preferred to those of Poona, owing to their superior finish. At the several fairs that are held annually in different parts of the city of Bombay, is exhibited for sale a large quantity of brightly polished pots of all sizes and shapes, from the diminutive ones of the children's toys to the larger ones of the grown-ups. These seem to spring up like mushrooms in a night, and disappear again in the same mysterious manner. On enquiry as to where they come from, the reply invariably is—from Nâsik. Nâsik being a place of pilgrimage, many Hindus visit it for religious purposes, and when they return to their homes they take with them a number of brass and copper pots as presents to their relatives and friends. At the thread and marriage ceremonies among the Hindus of the higher classes, a set of copper, brass or silver pots and cups are given to the boy who is to wear the sacred thread, and to the bridegroom. A great demand is thus created, and the industry is well supported, giving work to a large number of workmen, both Hindus and Musalmans. I found that the latter worked entirely in brass.

The system of working pursued at Nâsik is precisely similar to that carried on at Poona, viz.: that of one set of workmen being engaged in making only one pattern of vessel. I visited about one hundred copper and brass workshops, and in not a single instance did I find ornamental work of any kind being executed. On enquiry as to who made the ornamental *lotas* which were so common in former days, I was told that none were now made, unless to order. All the workmen were engaged in hammering, casting and turning articles entirely devoid of ornament, and yet Nâsik has always had the reputation for producing articles that were noted for their ornamental work. Poona I found to be the place where these things are now mostly made.

The other day, while at Nâsik collecting material for this monograph, I came across an old man, half blind, but still capable of doing good work. His occupation was to make small images in copper and brass, and other small articles used for family worship; and the few he had in his store showed that he was a workman of no mean skill. His workshop, unique in its simplicity, was about 6 feet square and 7 feet high, with the front open to the street; so that the passers-by could stop and have a chat, and watch the old man at work, as he had no trade secrets requiring him to hide his work from his fellow-men, for he trusted to his skill in execution for success. A green parrot in an iron wire cage, suspended to the beam across the shop front, was his companion, and now and again broke out into short ejaculations in Marâthi. On the wall, close up to the ceiling, were hung two highly coloured pictures painted on glass; one representing Indra on the seven-trunked elephant Iráwat; and the other, Shunker or Shiv, with his wife Pârbatî, and his son Gânpatî. In a small niche in the wall was the old man's shrine, in which he had a clay figure of Ganesha, the elephant-headed god of knowledge—for did he not want knowledge?—in front of which was a small *lingam-yoni*, and a few other—to him—sacred emblems, which were carefully protected from dust by a glass door. On a small shelf in front of the shrine were leaflets from the *Shastras*. In this confined space, little more than a cupboard, the old man pursued his vocation from day to day, with an unshaken belief in the gods and emblems of his ancestors, and with his mind unruffled by the new-fangled ideas and babblings of Congress-wallahs. His appearance was weird and picturesque. With nothing on his head save the long tuft of grey hair (*shendi*) hanging loosely at the back, his sacred thread (*janwa*) depended from

his left shoulder, his iron-grey moustache, his chin studded with a bristly growth of white hair three or four days old, his eyes bleared, his back bowed, and his tawny-coloured skin loose and wrinkled by age; there, cross-legged on the floor, he sat on a piece of matting, clad only in a waist-cloth, with his small square-topped anvil stuck in the mud floor in front of him, and the rest of his simple tools around him—a subject for a picture that would have delighted Gerard Dow.

Among the articles that he showed me were two ornamental brass tree-like stands for the purpose of holding small incense tapers during the time of worship, which he considered to be his *chef-d'œuvre*, and which he had made—he being a native of Baroda—for His Highness the Gaikwar. The old man told me, with evident grief, that, as His Highness was at present in England, he was afraid, owing to his great age, he should not have the gratification of presenting them to him. I had seen similar articles in Poona (Plate 29, fig. 3), but they were not to be compared to them as regards design and workmanship.

If any one desires to have a vivid impression of the remarkable use made by Hindus of vessels of every description in copper and brass, they should pay a morning visit to the bathing *ghât*, on the banks of the Godâverî at Nâsik. There thousands of Hindus—men, women, and children—are assembled; some performing their ablutions, some cleaning their vessels, others crowding down with empty pots to clean and to fill, and others departing with majestic gait, carrying their vessels filled to the brim, and piled one upon the other on their heads—a scene once witnessed will never be forgotten. And this has been going on, daily, for hundreds of years.

I believe it is owing to their continually carrying pots of water on their heads, that give to the women of this Presidency the magnificent upright carriage which characterizes them. From their very earliest childhood they begin to carry vessels, which they balance with remarkable grace, on their heads. I have seen women carry on their heads as many as three, placed one on the other, of the largest copper pots filled with water, similar to that shown at fig. 1, Plate 23. To see a Gujarâti woman with these large vessels balanced on her head, walking along with a swinging majestic gait, is like looking at one of Michael Angelo's women. The milk-woman (*dûdh-walli*) is a picturesque figure with four or five brass *lotas*, piled one above the other, balanced on her head and gradating upwards in size, from the large one to the small one on the top, which is used as a measure (Plate 23, fig. 13).

Poona.—A noted feature in the copper and brass manufacture of Poona is the introduction from England of machinery worked by steam power. "The Poona Metal Factory" was started in 1889, and is under the management of Mr. Anandrao Bhau, a coppersmith by caste, and a man of considerable intelligence and application. His father—and after his death, he, himself—was anxious to improve his caste trade, and, with this object in view, he has started, with the assistance of his friends, this factory, which is entirely worked by native agency. A number of lathes on the native principle; machines for cutting the metal into round discs; machines for punching the discs into the required shape; machines for trimming and turning the edges of the vessels previous to finishing them on the lathe, were at work, and all were driven by steam power. Over little charcoal fires, through which a blast was forced by machinery, were a number of workmen engaged in annealing the pieces of metal. The wastage or cuttings is sold to persons who cast articles, such as lamps, chains, images, &c. Mr. Bhau makes his own punches to turn out the patterns mostly approved by native taste. Although the articles turned out are small in size (as the machinery is not adapted at present for larger ones), the outturn is far better than the hand-made articles, having greater accuracy and finish, and produced with a considerable saving of time and labour.

The following articles are made in the factory, thousands of each pattern being turned out:—*tamhan* (Plate 28, fig. 3), *tat*, *vati* (Plate 24, figs. 3, 12, and 13), *rampatra* (Plate 26, figs. 1 and 3), and *lota* (Plate 28, fig. 6).

It appears that there is a very large trade in the importation of teacups and saucers from Germany, made of German silver for the use of Hindus, owing to the prejudice they have against using porcelain. Mr. Bhau is now preparing dies for making these.

There are several workshops in Poona where copper and brass work is executed; each workshop being noted for manufacturing one particular set of articles and doing nothing else. For instance, in one the workmen make nothing but the larger vessels for cooking and carrying water; in a second, the smaller and more delicate articles used for the purpose of family worship, such as small images, incense holders, *pan supari* boxes, &c.; in a third, nothing but lamps are manufactured, which are usually cast in three pieces—the top for oil and wicks, the centre column, and the base; these three pieces are finished on the lathe and by filing, and then screwed together (Plate 38, figs. 4 and 5). One workshop is noted for the manufacture of oblong brass boxes, which are cast in the first instance, and then finished by filing and burnishing; and another for making sham jewellery in brass,

for which there is a considerable demand among the lower classes of Hindus (Plate 39). At one place hundreds of small bells, strung together and hung round the necks of bullocks, were turned out (Plate 26, fig. 3*a*).

Bombay.—In Bombay, the copper bazaar in Momba Devi Road used formerly to present a busy scene, accompanied by an almost deafening noise and din, pertaining to the hammering of copper and brass; but now this is all changed, owing to the fact that the greater part of the wares, with few exceptions, are now imported ready made, and one only hears occasionally the clanking of the vessels as they are put into the scales for a purchaser. The bazaar, nevertheless, is remarkably picturesque, with each little shop filled with articles of every shape and description, all aglow with reflection, either of the yellow colour of the brass or reddish colour of the copper. Here will be found the smaller and larger vessels used for cooking, and for carrying and storing water, made in another part of the city; bullock bells and chains from Surat; beautifully turned pots from Nâsik and Poona; brass *huka* bowls from Sind; *lotas* engraved with ornament and figure subjects from Benares; perforated brass boxes from Jeypore; and large brass trays, with floriated patterns, from Calcutta. The places of manufacture in Bombay are Kasar Gali, Mugbhat Gali, and Fanaswadi. Here the din from hammering is deafening where some hundreds of workmen may be seen at work in making vessels for domestic use only.

Ahmedabad.—Large quantities of copper and brass articles are made in Ahmedabad. Besides the ordinary utensils used for domestic purposes, the Ahmedabad coppersmiths (*Kansárás*) can make, when required, very effective screens of elaborate geometric patterns of perforated panels in brass, after the manner of the perforated stone screens of the old buildings. Another speciality is the betel-leaf holder (*pándán*), a small box of the most delicate brass tracery, carried on the person (Plate 27, fig. 7); also boxes for keeping jewellery, inkstands, boxes for holding sweets and spices, rings, lamps, idols, bells, chains, and tongs. The raw material, copper and brass, is brought from Bombay by Musulmân dealers of the Shia or Dándi Bohora sect, and sold to the coppersmiths. Electro-plating on copper is, to a small extent, carried on here; and the process has completely supplanted the old method of covering the copper with silver leaves. Horse trappings for marriage processions are electro-plated. The odd thing about it is that electro-plating is carried on by platers (*rasániás*) of the shoemaker (Mochi) caste.

Kolaba.—Mr. Lamb, the Collector of Kolaba, states that the manufacture of copper and brass pots is gradually on the decline; pots are imported from Poona, Nâsik, and other parts of the Deccan to a greater extent than before. In Alibâg there is a considerable trade in teapots. About 3,000 pots made of copper are manufactured every year, and sent for sale to Bombay and other places, each costing from 15 annas to ₨1 - 8. With regard to this matter, Mr. Sinclair, the Collector of Thana, and formerly for many years Collector of Kolaba, says that nothing worth calling "artistic" brass or copper ware is manufactured in either the Thana or the Kolaba District; but many of the familiar forms of vessels are graceful enough. Both Districts depend, for the larger and better classes of metal vessels, on Bombay. As regards the inferior vessels, on the other hand, they are sometimes manufactured in Alibag and in other places almost suburban, and sent into Bombay. The reason of this assigned by the makers is that an inferior workman can live cheaper in these places, and work at a lower rate. A first-rate workman, on the other hand, finds a better demand for his costlier productions in Bombay, and can get a good living wage there. This tendency of inferior handicraftsmen to be first driven to suburbs is to be noticed in all manual skilled labour in all great cities.

Ahmednagar.—In the Ahmednagar District only the ordinary culinary utensils are made, with the exception of Sangamner, where one man, whose work is above that of the ordinary run, makes betel-nut scissors and handles for fans, which exhibit much skill and taste (Plate 27, figs. 2 and 4).

Satara.—Shirala is still the centre of the brass trade in the Satara Collectorate, where articles are cast—not wrought—in brass, of the value of ₨1,000 to ₨1,200 every year.

Surat.—At Surat there is a pretty large manufacture of brass and copper plates or trays (*thali*) chased with conventional designs, mostly of flowers and leaves. They are often plated with tin, or silver. These articles are in fairly good demand by Bhoras and other Musulmâns, and are exported to Sind and elsewhere.

Brass rods, with designs embossed on them, are used for bending into armlets and wristlets, the edging of plates, and the like. They also are often plated with tin, silver, or gold, and are largely exported to Sind and the Punjab.

Sind.—In nearly every division in Sind brass and copper wares are manufactured for domestic purposes. Shikârpur has the reputation for making brass hubble-bubbles (*kali*).

KHANDESH.—Copper and brass were formerly imported in blocks, and worked first into sheets and then into utensils, but now ready-made sheets are largely imported from Bombay. Most of the copper work made in Khandesh is for domestic use, and very little is made of an ornamental character. The coppersmiths of Songir, in Dhulia, and of Faizpur, in Sávdá, are skilled in making gongs and bells.

BARODA.—Dabhoi and Kadi, in the Baroda State, are noted for their copper and brass wares in ordinary use among the natives, on account of their high finish and the elegance of their forms; and those made at Visnagar are much prized, and many of them are exported to Ahmedabad and Káthiáwár.

DHARWAR.—Hubli, in the Dharwar District, turns out a large quantity of copper and brass articles used for domestic purposes, for local supply, and for exportation to Belgaum, Bangalur, Belari, Kolhapur, Sholapur, Raichur, Mangalur, &c. Besides the ordinary copper and brass vessels, bells and gongs are made from bell metal (*khanchu*), a mixture of copper and lead, or tin.

KOLHAPUR.—Brass work of a superior quality is made at the Technical School, Kolhapur, in addition to the ordinary utensils, such as pots, lamp-stands, bells, &c., made by coppersmiths in the town.

SANGLI.—Sangli has the reputation for turning out good copper and brass work—both polished and turned.

THE MANUFACTURED ARTICLES.

The following are some of the articles in use (*a*) for cooking purposes; (*b*) for carrying and storing liquids, or drinking from; (*c*) for the toilet; (*d*) for carrying and serving betel-nut or *pan-supari*; (*e*) for religious purposes; (*f*) and for lighting:—

(*a*) For cooking purposes: *Patele*, a cylindrical copper or brass pot with slightly rounded bottom, varying in size from two inches to five feet in diameter; used for cooking vegetables and curries, and also for storing water; it is likewise used for storing sweetmeats, and rows upon rows may be seen in the bazaars in the sweetmeat sellers' shops, filled with every variety of native confectionery; it is the cooking pot tinned, in use also in European kitchens, in India. *Tapele*, something in form like the *lota*, from three inches to four feet across; the small ones are used for boiling rice and holding milk, and the large ones for storing water (Plate 23, fig. 5). *Kadai*, a hemispherical vessel with two handles, used as a frying pan. *Roli (rovali)*, a cylindrical pot about nine inches in diameter and a foot in depth; the sides are perforated with holes, so that it acts as a sieve, and is used for washing rice. *Parat*, a large circular dish, from two to five feet in diameter, with a rim about two to four inches high, principally used for carrying cooked rice or vegetables from the cook-room to the dining room. *Pali*, a large brass spoon with a handle two feet long; used for serving vegetables. *Karanda* or *modak patra*, a dish composed of three pieces, for stewing *modaks, shengas*, and other dainties. *Zara*, a circular flat strainer, with a handle about three feet long; used for frying *bundis*. *Velani*, a dish about one foot in diameter, with or without a handle; used for serving rice in small quantities (Plate 24, fig. 10). *Ográle*, a round-bottomed cup with a handle, very like a saucepan, used for serving rice or vegetables. *Tat*, a polished brass dining dish. *Koshimbarichá ghad*, a set of seven brass cups; six united together, by their sides, round a centre one, so as to form one article, with a handle over the top; used for serving *koshimbris* (pickled fruit and vegetable).

(*b*) For carrying, storing liquids, and drinking from: *Handa* (Plate 23, fig. 1), *ghagar* (Plate 23, fig. 3), *kalasi* (small *ghagar*) (Plate 23, fig. 6); used for carrying and storing water. *Pohara*, a copper pot with a long piece of rope attached to it; used for drawing water from wells (Plate 23, fig. 2). *Surdhi*, used for carrying water. *Lota* and *loti*—the first is applied to a large pot, the second to a small one—are made of copper or brass, or a combination of both, and are universally used by Hindus for carrying and drinking water (Plates 26, fig. 8; 24, fig. 14; and 28, fig. 6). *Panchpatri*, a cylindrical cup with a rim (Plate 26, fig. 12); *piyala*, a cup (Plate 23, figs. 4 and 7) with a stand (Plates 24, fig. 7; 26, figs. 4, 5, 6); *rampatra*, named after Râm, the deified king of Oudh (Plate 26, fig. 3); *phulpatra*, from its resemblance to a flower, *phul* (Plate 24, fig. 5); *manakarnika*, a small brass cup; *kamandalu*, so called from its resemblance to a lotus flower, used by *sanyasis* (ascetics) (Plate 25, fig. 3); *pharsi-tambia*, so named from being used by Pársis (Plate 26, fig. 9), are all used for drinking water. *Gadava*, *tambia*, and *valyacha-tambia* are copper or brass pots, used for holding each person's supply of water; a *gadava* with a spout is called a *jhari* (Plates 24, fig. 11; 23, figs. 9, 14). *Vati*, a round brass cup used for taking milk, *ghee*, or curry at meals (Plate 24, figs. 12 and 13). *Pavsheri* (Plate 23, fig. 10*a*), *gundi* (Plate 23, fig. 11), *tapeli* (Plate 23, fig. 12), and *kasandi* (Plate 23, fig. 13) are used for carrying milk, and are usually piled one upon the other, and carried on the head; the *pavsheri* (quarter seer) on the top, placed with its mouth downwards, is the measure. *Ghangala*, a copper pot used for holding hot water for bathing, and also

for washing clothes in (Plate 24, fig. 6). *Telachi-jhari,* a small brass cup, with lid, for holding oil for daily use (Plate 25, fig. 2*a*). *Chahádani* or *kitli,* the English kettle, for making tea, is much used by educated natives; the tea leaves are put into the kettle and boiled (Plate 25, fig. 9).

(*c*) For the toilet: *Karanda,* a box for keeping red powder called *kunku,* which is applied by native women—both married and unmarried, not widows—to their foreheads; it has two compartments: in the lower is placed the red powder made by mixing turmeric *(halad),* carbonate of soda *(pápadkhár),* and lemon juice, in certain proportions; and in the upper is fixed a mirror to the lower lid, and a small box to the upper lid for keeping bees'-wax, with which the red powder is made to adhere to the forehead. *Dabi,* an air-tight box in which perfumed paste *(argajás)* is kept. When required, a small quantity is taken out with the index finger and applied to the back of the hand; it is also used for keeping red lead which is applied to the parting of the hair, and for *kajal* (lamp black mixed with oil) which is applied to the lower eyelashes of women; also for keeping *argajá,* or turmeric powder, which is put between the two eyebrows (Plate 27, fig. 13). *Kairi,* a brass mango-shaped phial, used for keeping *dátavan* (tooth powder) which is applied to the teeth for strengthening them; it blackens the teeth; it is now generally used by low caste women, especially after childbirth. *Arshi,* a flat brass box—round, square or oval—with a mirror in the lid.

(*d*) For carrying and serving betel-nut, or *pan-supári*: *Chauphula,* a box used for keeping cardamoms, cloves, mace, nutmeg, catechu pills, and other ingredients—in all thirteen—of *pan-supari* (Plate 27, fig. 1). It is composed of five, seven, or nine cup-shaped compartments, although the word *chauphula,* which means "four flowers," implies that it has four, which is not the case, as it is always made up of uneven numbers; each cup has a separate lid, shaped like the petal of a flower, with a small bird on the top, and is attached to the cup by a hinge; all the lids close upwards and inwards, and are kept closed by a screw handle formed like a lotus flower. *Chunál,* a box for keeping the slaked lime, which is applied to the leaf of the Piper betel (*nag-vel,* snake-creeper), and chewed with betel nut *(supari)* and other ingredients mentioned above (Plate 27, figs 5 and 6). *Adkittá,* a steel blade let into a brass frame, and worked like a nut-cracker; used for slicing betel nut (Plate 27, figs. 2 and 4); some are very ornamental, and, in addition to the surface decoration, have a quantity of small silver balls attached to small holes in the brass frame (Plate 27, fig. 4). *Pánpud* (*pán*—leaf, *pud*—drawer, a drawer for keeping leaves), used for keeping the leaves of the *nag-vel*; it also has a small compartment at one end for keeping the lime used with the leaf (Plate 27, fig. 7). *Tambakhuchi-dabi,* a small box for keeping tobacco, which is chewed with the *pan-supari,* and acts as a stimulant; it has two lids, each with two holes—the inner lid being a fixture, and the upper one working on its axis—so that when it is turned either to the right or left, the box is open or closed, as the case may be (Plate 27, fig. 12). *Dabi,* a small box used for keeping lime as well as catechu pills (Plate 27, fig. 13). *Panachá daba* (a box for leaves) is a brass box of modern invention, used for keeping together in one place *pan-supari* and all the ingredients that are used with it; the box usually has a small looking glass inserted in the lid; it is presented with other articles, such as dress, bedding, &c., to the bridegroom by the father of the bride after marriage (Plate 27, fig. 9). Another common form for the same purpose is the *mór* (peacock, Plate 27, fig. 14*a*), with a small box of several compartments (Plate 27, fig. 14*b*), which is fitted into the back. *Khal-batta* (mortar and pestle), used for pounding *pan-supari,* when required, for the aged who have lost their teeth (Plate 27, figs. 11*a* and 11*b*). *Pikdani,* a spittoon (Plate 27, fig. 10); *tasta,* a spittoon, also used for washing the hands and feet (Plate 27, fig. 15). *Attardani,* a small article for keeping *attar* (perfumed oil), a few drops of which are placed on the back of the hand, by means of a small silver spoon, after the distribution of *pan-supari* (Plate 27, fig. 3). *Gulab-dani* (rose-water holder), used for sprinkling rose-water over the guests at the conclusion of parties and other ceremonies (Plate 27, fig. 8).

(*e*) For religious purposes: *Tabak,* a brass plate used for carrying flowers and the small vessels required for the purpose of worship (Plate 28, fig. 1). *Ghanta,* a brass bell with a handle composed of Garud (a bird, the vehicle of Vishnu) and Máruti (the monkey god, the vehicle of Rám); the bell is rung at the beginning of worship as a warning to demons to depart and gods to appear (Plate 28, fig. 2). *Tamhan,* a small round dish of copper or brass, used for washing images at the time of worship; it is also used for pouring water at the time of performing *sandhyá* (prayer), and also for offering water oblations to gods, *rishis* and ancestors (Plate 28, fig. 3). *Arghya,* a small cup with a handle and elongated spout, from which sacrificial water is poured (Plate 28, fig. 4). *Adni,* a small tortoise-shaped stand on which the *shankh* (conch) is placed (Plate 28, fig. 5). *Loti,* a small brass pot used for drinking and carrying water (Plate 28, fig. 6). *Jhari,* a small pot with a spout, used for offering daily oblations of water to deceased relatives, and also used for taking a small quantity of water called *achman* at the time of performing *sandhyá* (prayer) (Plate 28, fig. 7). *Kachole,* a vessel with three or five oval divisions for holding the white and red sandalwood paste and the moistened rice, with which the brows of the gods are

marked (Plate 28, fig. 8). *Samai*, a small lamp placed on either side of the idol at the time of worship, in which clarified butter *(ghee)* is burnt (Plate 28, fig. 9, and Plate 29, figs. 5 and 15). *Abhishekapátra* is a small brass cup with a tapering base, like a top, with a small hole at the extremity, through which the water trickles on to the idol below; it is supported in a small stand, and is used for daily worship at home (Plate 28, fig. 10); a larger kind used in temples is suspended by a chain (Plate 29, fig. 13). *Sandhechi pali*, the spoon used for taking water during the performance of *sandhyá* (prayer) and other religious rites (Plate 28, fig. 11). *Halakárti*, a fish-shaped spoon for burning camphor before the idol (Plate 28, fig. 12). *Niranjan*, used for burning clarified butter *(ghee)* before idols (Plate 28, fig. 13). *Chauki*, a four-legged stand used for placing the idols upon (Plate 28, fig. 14). *Udabattiche ghar*, a stand for holding the perfumed incense sticks (*udabatti*), which are kept burning at the time of worship before the idol (Plates 28, fig. 15; and 29, fig. 10). *Panchpálé*, a box with five (*panch*) compartments (*pálé*) for keeping turmeric powder, *gulal*, *abir*, and *kunku*—powders for applying to the foreheads of the idols at the time of worship (Plate 28, fig. 16). *Pancharti*, a five-wicked lamp, for burning clarified butter (*ghee*) before the gods (Plate 28, fig. 17). *Dhuparti*, a stand for burning incense (*dhup*) (Plate 28, fig. 18). *Sampusht*, a box in two pieces, for keeping the idols at night after evening worship, and also for carrying them when travelling (Plate 28, fig. 19). *Naivedyacha pela*, a cup (*pela*) for offering sugar or milk (*naivedya*) to the gods at the end of worship (Plate 28, fig. 20). *Tulsi-vrindavan*, a small stand in which the *tulsi* plant (*ocymum sanctum*), the wife of Vishnu, is grown, the plant being worshipped daily by the female members of the family (Plate 28, fig. 21). *Kamal*, a stand for idols, named from its resemblance to an open lotus flower (*kamal*) (Plate 28, fig. 22).

Jina or Tirthankara, one of the saints of the Jainas (Plate 29, fig. 1). Maruti or Hanuman, the monkey-god, son of Vayu (wind) was the devoted ally of Ráma, in his conflict with the Rakshasas; he has the reputation of possessing extraordinary physical powers, and consequently he is recognised as the god of power; he is universally worshipped by village communities, and a temple is invariably erected to him on the outskirts of every village in Maharashtra (Plate 29, fig. 2). *Udbattiche-jhad*, a tree-shaped brass stand mounted on an elephant, used for burning incense sticks; it is generally placed near the plate of the bridegroom or other distinguished guests at dinner-time (Plate 29, fig. 3). *Murlidhar*, a figure of Krishna playing on the flute (Plate 29, fig. 4). *Bálkrishna* (a baby Krishna), the eighth incarnation of Vishnu, crawling like a child, with a ball of butter in one hand, typical of his having been born in a family of milkmen (*gavalis*) (Plate 29, fig. 6). Rám, the deified king of Oudh, believed to be the seventh incarnation of Vishnu, with his wife Sita (Plate 29, fig. 7). *Ashtabhuja-devi*, an eight-handed goddess, slaying the giant Mahisasura, who had concealed himself in the body of a buffalo (Plate 29, fig. 8). Vishnu, seated on the coils of a cobra (Plate 29, fig. 9). Vishnu, the preserver, the second member of the Trimurti (Plate 29, fig. 11). Mahadeo, represented by the *linga*, with his vehicle *Nandi* (the bull) before it, the whole mounted on a brass stand (Plate 29, fig. 12). Bhavani or Kali, the consort of Shiva (Plate 29, fig. 14). Rája Bali, a fabulous king of Pátál, who was proverbially pious and liberal. On the *pratipada* day in the Diwále, Rája Bali is worshipped by all Hindus, who on that day have their houses thoroughly swept and dusted before sunrise, and the sweepings placed in an old basket, which is given to the servant to take and place, with a lamp and a pice or two, on the road-side, the servant beating a *batáki* and reciting:—"*Ida pida jao, áni Baliche ráj yeo*" ["Let all calamities disappear and Bali's Ráj be established again."]. Bali is then worshipped, and a *köt* or heap of crackers and other fireworks, arranged like a fort and fired, end the ceremony. Rája Bali is supposed to have lived before Parashurám or Rám. Váman, the fifth incarnation of Vishnu, drove him to Pátál, or an imaginary place below the earth, the kingdom of that region being eternally assigned to him (Plate 29, fig. 16). Parvati, the wife of Shiva (Plate 29, fig. 17). Ganpati, the god of knowledge and the son of Shiva and Durga, is a fat four-handed seated figure, with the head of an elephant; before the commencement of all auspicious ceremonies this deity is first worshipped, as he is supposed to be the destroyer of all difficulties (Plate 29, fig. 18). *Gauri* is the head of a woman in brass, which is put on the figure of a woman made of cloth and dressed like a high-caste woman of the Deccan, and is worshipped in every house in the Deccan in August or September during the Ganpati festival (Plate 29, fig. 19). *Ganga jali* is the vessel in which the sacred water of the Ganges (after which it is named) is kept and worshipped along with the household gods. The small head of a woman forming the stopper is symbolical of the Ganges (Plate 29, fig. 20).

Bells play a very important part in Hindu worship. They may be seen hanging in clusters at the entrance of every temple, and usually they are objects of votive offerings. Plate 41 gives a good idea of the bells which are at the entrance of Kashi-vishweshwar in Buleshwar, Bombay.

(f) For lighting: The use of kerosine oil has, in a great measure, superseded cocoa-nut oil, so that the brass lamps for burning the latter are now not so much in demand. The following are the principal lamps

used for burning cocoa-nut oil :—The *kandil*, a hanging lamp, generally used in shops (Plate 38, figs. 1, 2, and 3) ; the *samai*, a standard lamp used in houses (Plate 38, figs. 4 and 5) ; the *divli*, a small hanging lamp used for carrying about the house (Plate 38, fig. 6) ; the *lamandiva*, a hanging lamp used in the kitchen (Plate 38, fig. 7).

Brass Chains.—One of the most common forms of enjoyment indulged in by both rich and poor of the native community is that of swinging in a cot, and this, to those who can afford to do it, is developed to a fine art. The chains, which are attached to the four corners of the cot and suspended from the ceiling, are objects of art, upon which the highest skill in design and metal working is bestowed. Bhavnagar and Sihor (about fifteen miles from Bhavnagar) have the reputation for making these chains. They are cast from patterns first carved in wood, further finished by filing, and incised lines of ornament hammered in with an iron punch. One of each of three sets (four form a complete set) is illustrated in Plate 40. The large perforated bowl-shaped receptacle is an incense-burner; and the smaller perforated bowls contain small brass balls which, when set in motion, give a jingling noise, so dear to the native ear, as the cot is swung to and fro. The individual rocked in one of these jingling cots, smoking his *hŭka* in an atmosphere redolent with incense, enjoys the very essence of luxurious and slumberous ease.

All articles, excepting those which are ornamented, are sold by weight, at so much a *seer*, the prices varying according to the market rate of copper and brass sheets. The *seer* in the city of Bombay is equal to ¾ lb., whereas in the Mofussil it is equal to 2 lbs.

LIST OF ILLUSTRATIONS.

The Brass and Copper Wares of the Bombay Presidency. Plates 23 to 26.—Articles used for domestic purposes. 27.—Articles used for *pan-supári*. 28, 29.—Articles used for religious purposes. 30, 31.—A copper-smith at work. 32.—Tools used for working in brass and copper. 33.—A native lathe. 34.—Large Vase, in *repoussé*. 35.—Specimens of ornamental work executed at the Reay Art Workshops. 36.—Brass plates from Poona and Kutch. 37.—Entrance door to the Shrawak Temple. 38.—Lamps. 39.—Sham jewellery made in brass at Poona. 40.—Ornamental chains. 41.—Bells at the entrance to Kashi-vishweshwar Temple.

SIR J. J. SCHOOL OF ART,
BOMBAY.

23.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
Articles used for domestic purposes.

M. V. DHURANDHAR.

24.—The Brass and Copper Wares of the Bombay Presidency.

Articles used for domestic purposes.

SIR J. J. SCHOOL OF ART, BOMBAY.

M. V. DHURANDHAR

SIR J. J. SCHOOL OF ART.
BOMBAY.

25.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
Articles used for domestic purposes.

M. V. DHURANDHAR.

SIR J. J. SCHOOL OF ART, BOMBAY.

26.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
Articles used for domestic purposes.

M. V. DHURANDHAR

SIR J. J. SCHOOL OF ART,
BOMBAY.

27.—The Brass and Copper Wares of the Bombay Presidency.
Articles used for *pan-supári*.

M. V. DHURANDHAR.

SIR J. J. SCHOOL OF ART,
BOMBAY.

28.—The Brass and Copper Wares of the Bombay Presidency.

Articles used for religious purposes.

M. V. DHURANDHAR

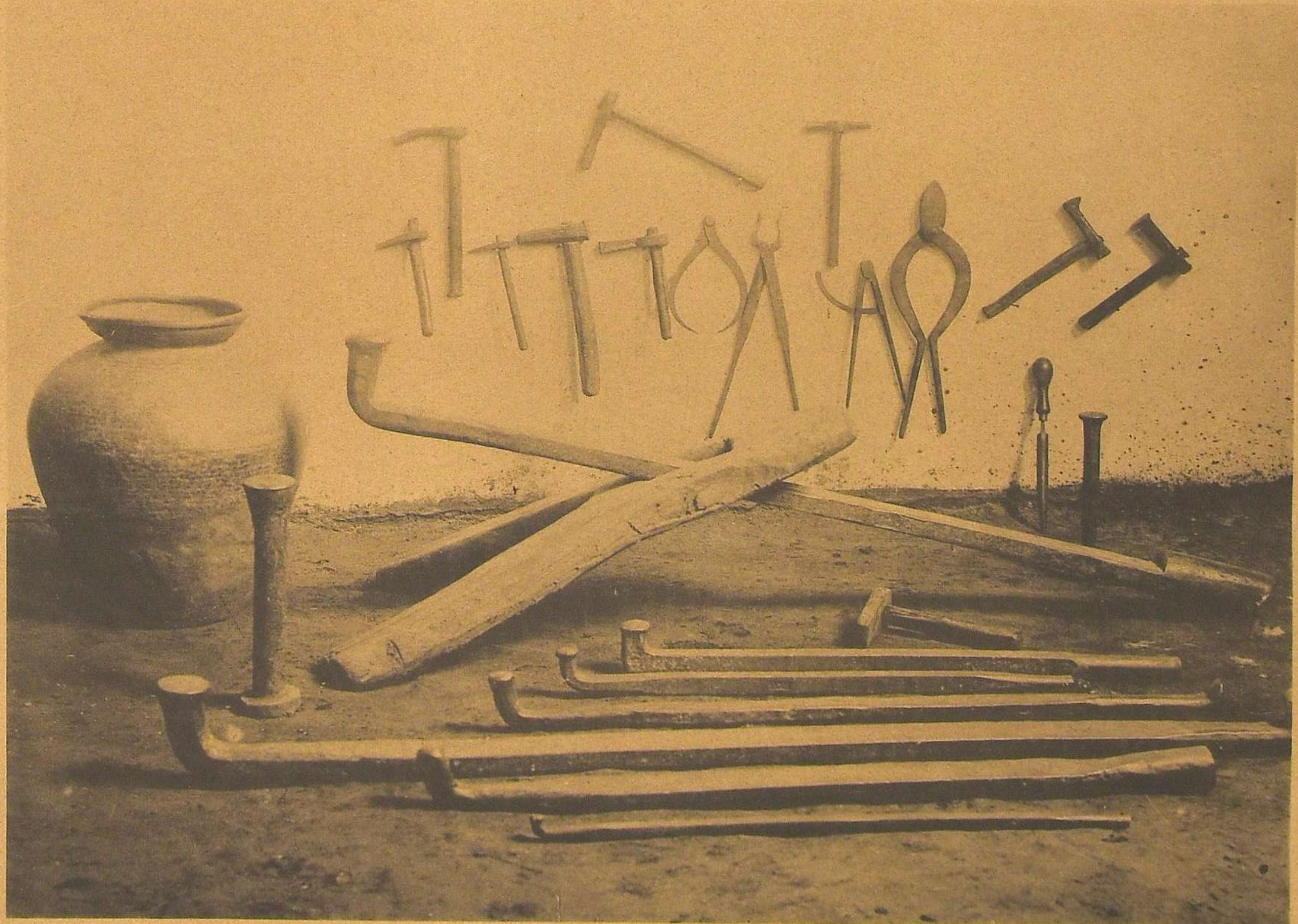
SIR J. J. SCHOOL OF ART,
BOMBAY.

29.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
Articles used for religious purposes.

M. V. DHURANDHAR

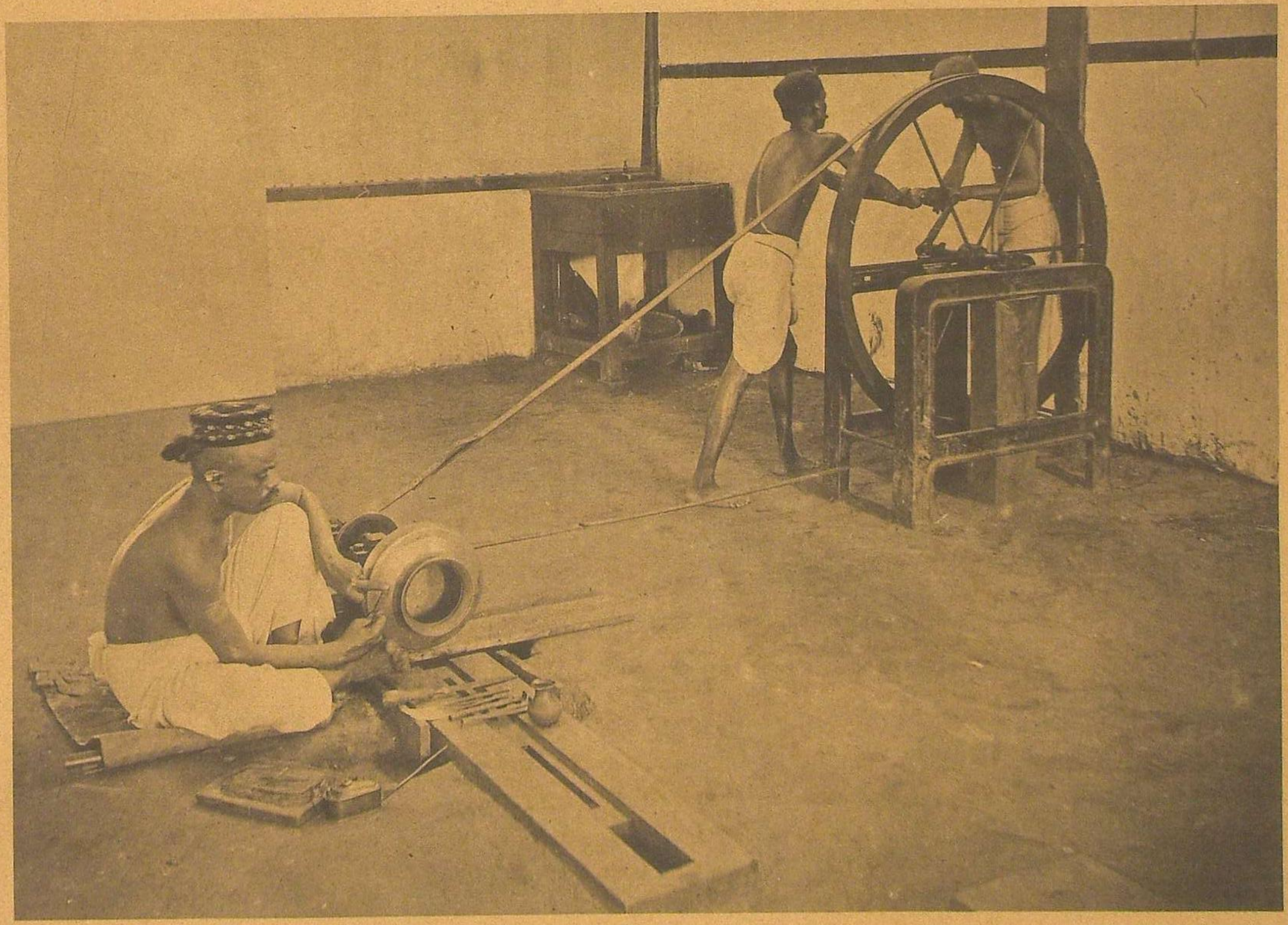
30.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
A copper-smith at work.

31.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
A copper-smith at work.



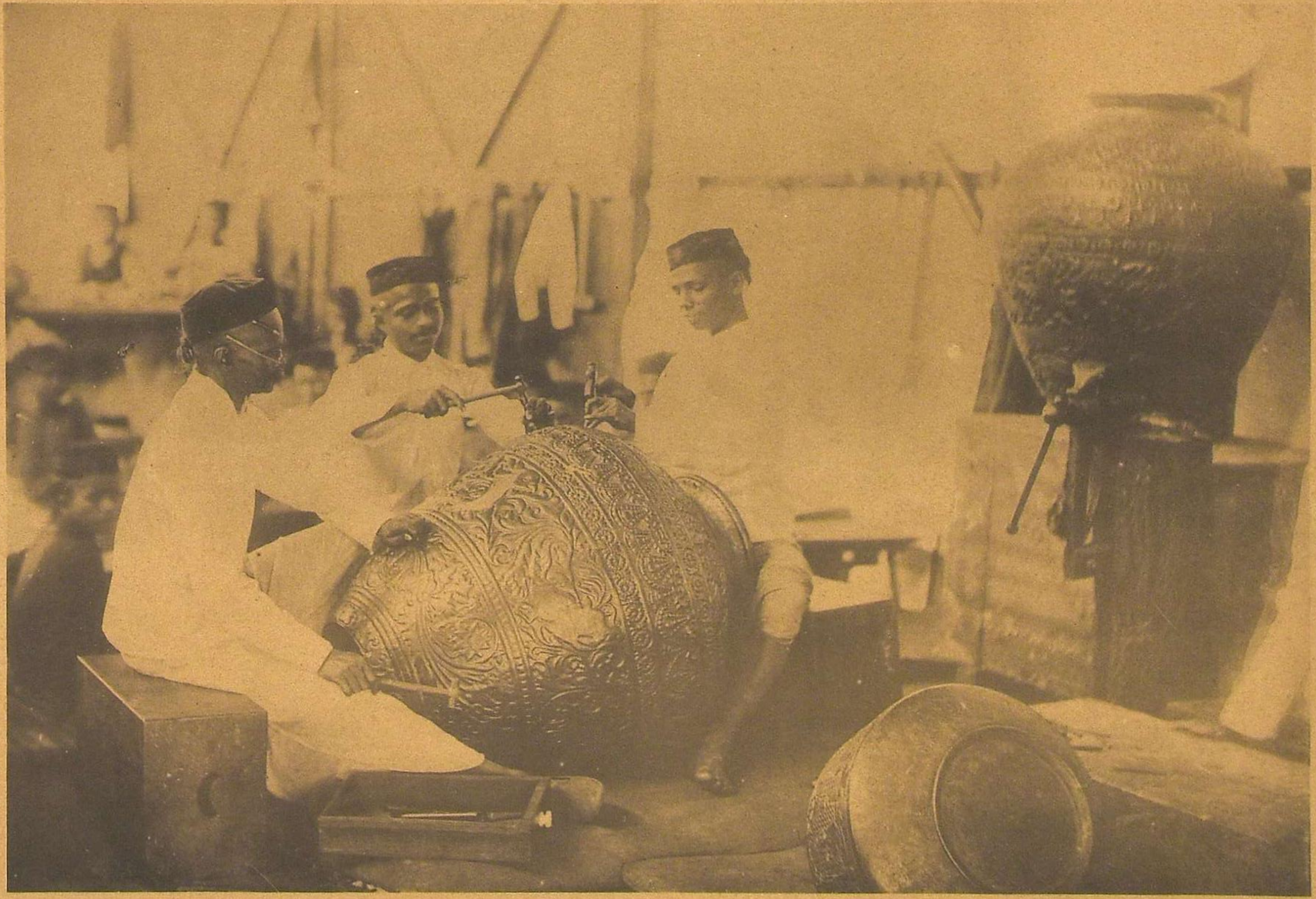
32.—The Brass and Copper Wares of the Bombay Presidency.

Tools used for working in brass and copper.



33.—The Brass and Copper Wares of the Bombay Presidency.

A native lathe.



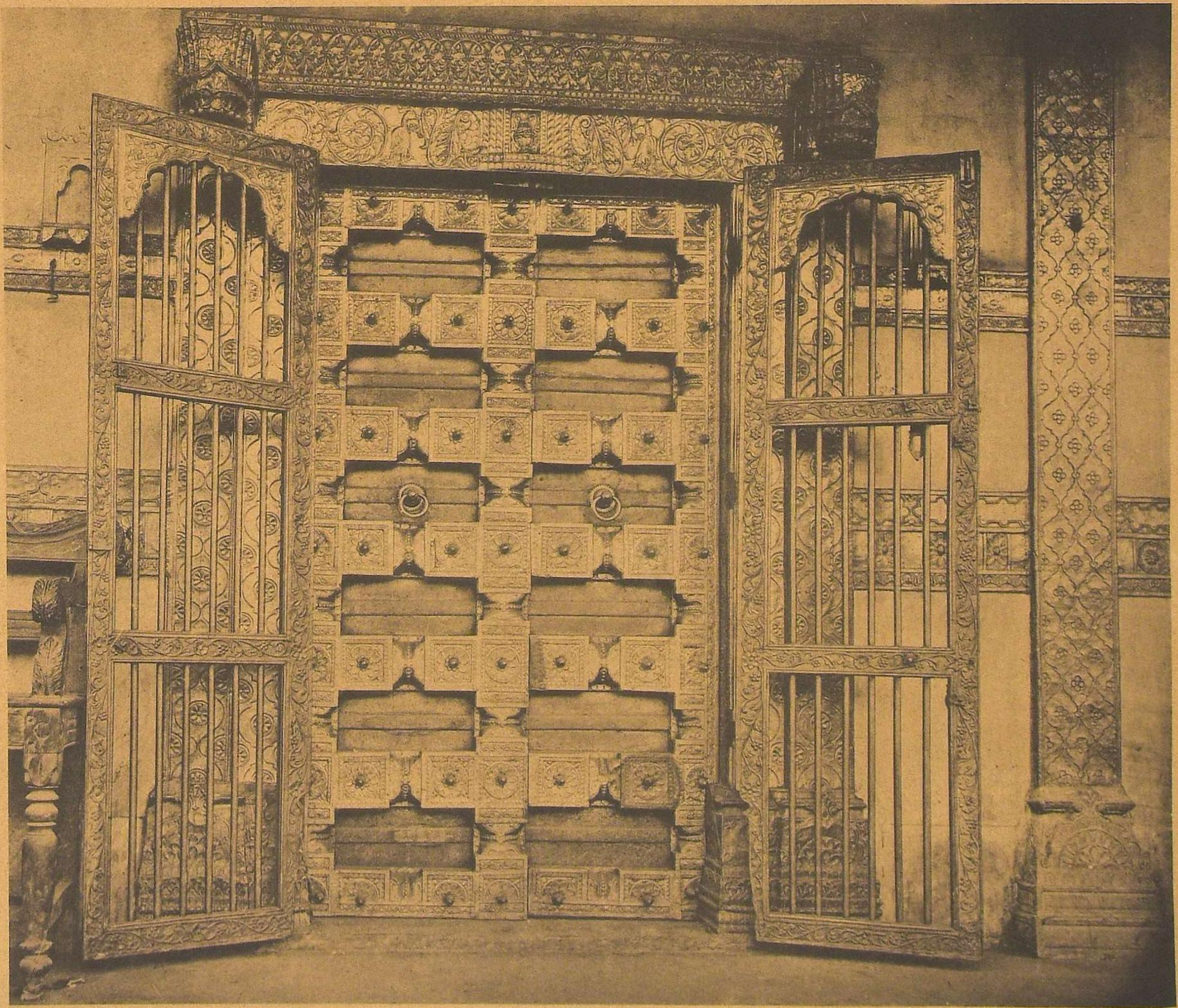
34.—The Brass and Copper Wares of the Bombay Presidency.

Large Vase, in *repoussé*. Reay Art Workshops.

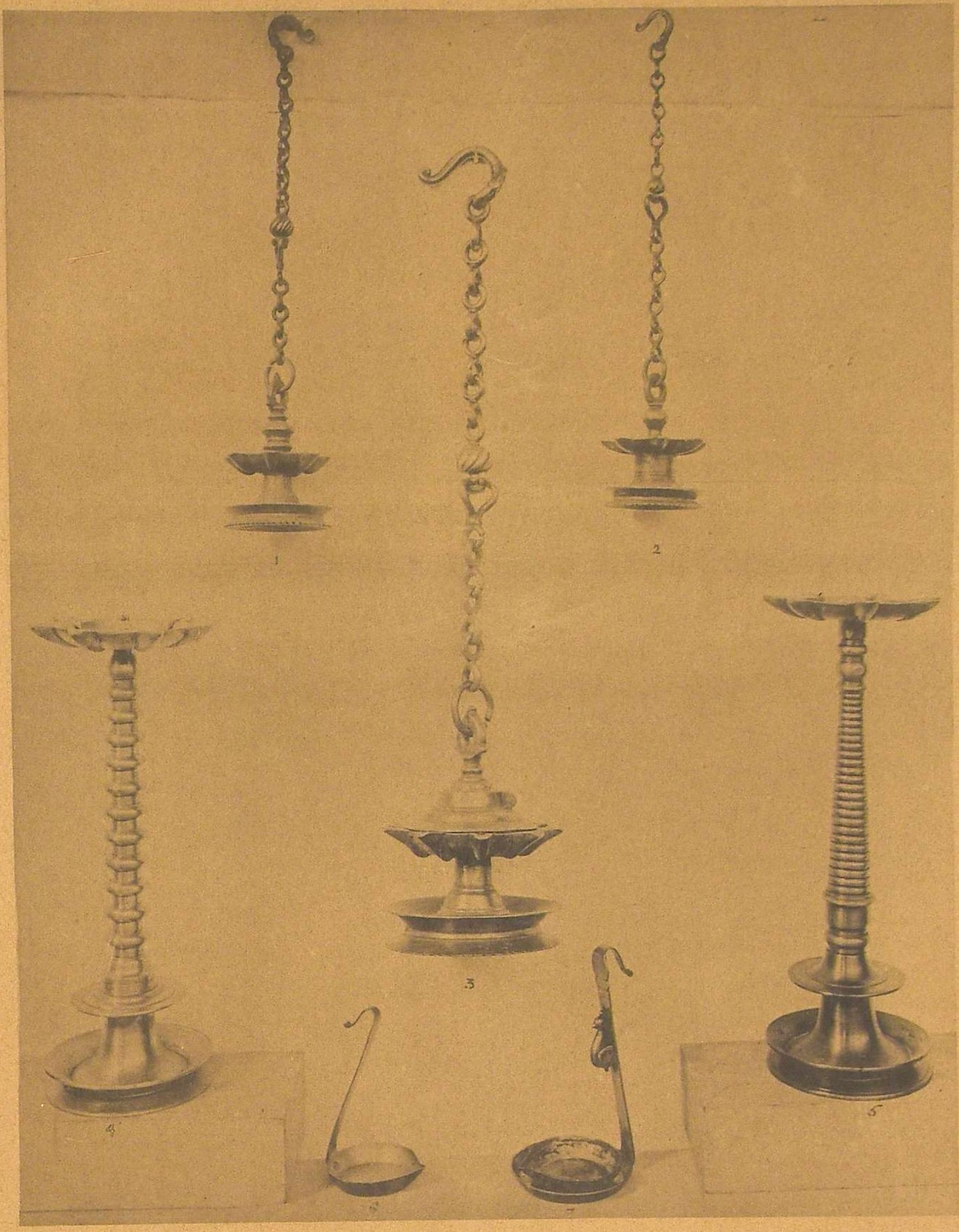
35.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
Specimens of ornamental work executed at the Reay Art Workshops.

36.—The Brass and Copper Wares of the Bombay Presidency.

Brass Plates from Poona and Kutch.

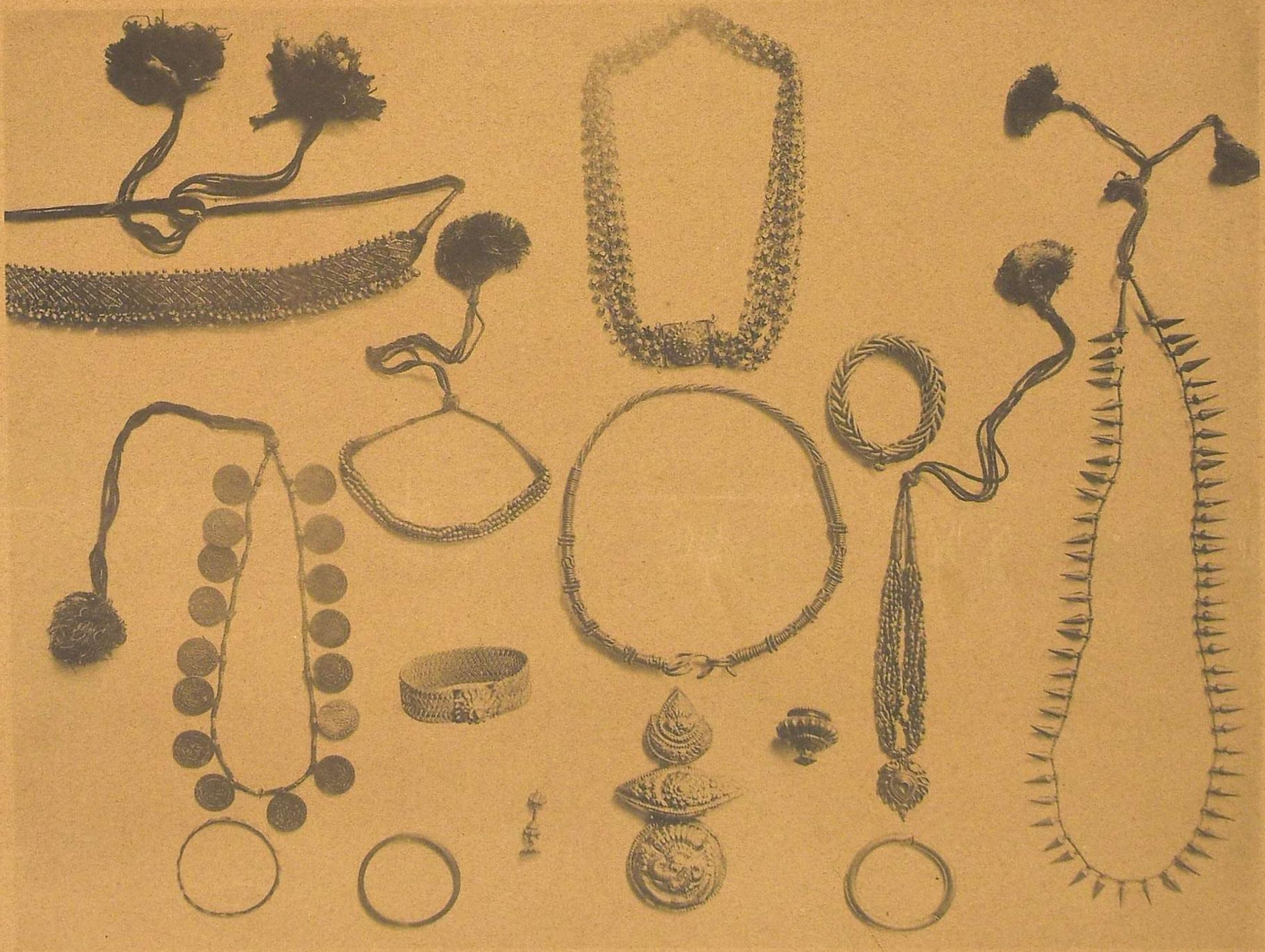


37.—THE BRASS AND COPPER WARES OF THE BOMBAY PRESIDENCY.
The entrance door to the Shrawak Temple, Pydhoni, Bombay.



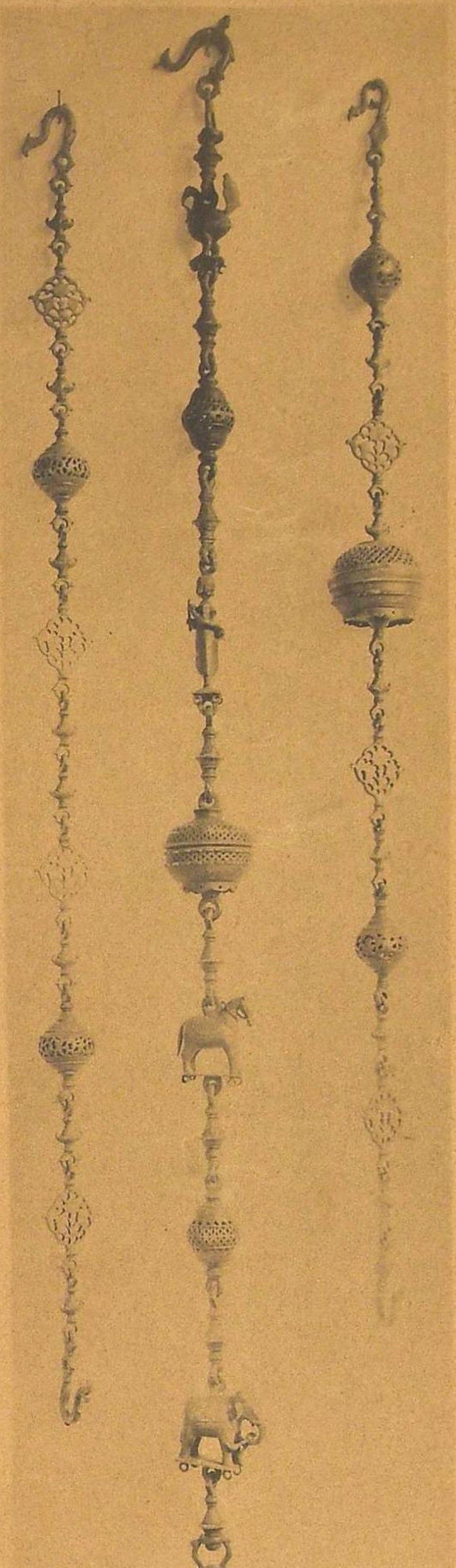
38.—The Brass and Copper Wares of the Bombay Presidency.

Lamps.



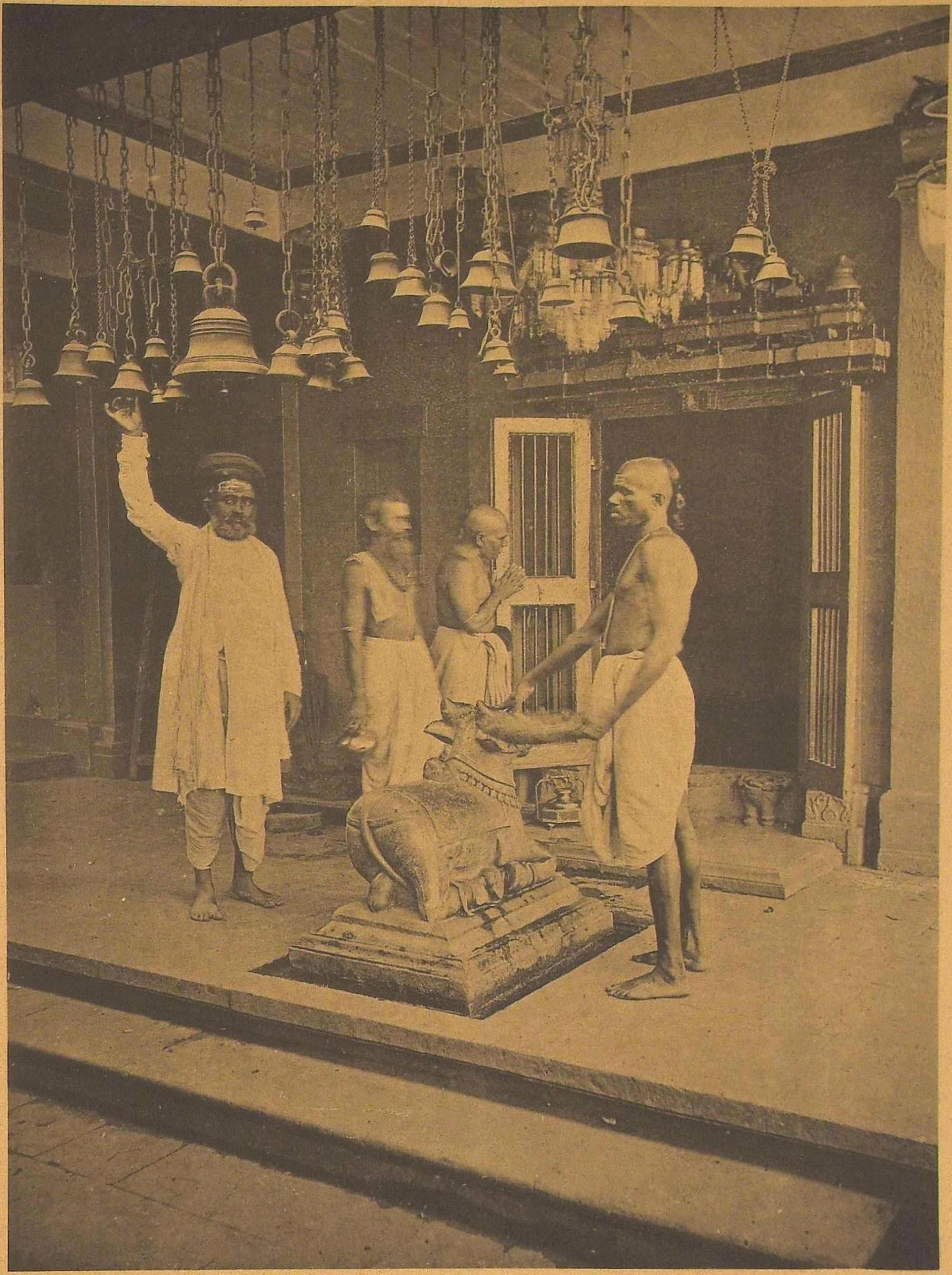
39.—The Brass and Copper Wares of the Bombay Presidency.

Sham jewellery made in brass at Poona.



40.—The Brass and Copper Wares of the Bombay Presidency.

Ornamental chains.



41.—The Brass and Copper Wares of the Bombay Presidency.
Bells at the entrance to Kashi-vishweshwar Temple, Buleshwar, Bombay.

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